



## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>E04002PCT</b>	FOR FURTHER ACTION	See Form PCT/IPEA/416																								
International application No. <b>PCT/JP2004/007709</b>	International filing date (day/month/year) <b>03.06.2004</b>	Priority date (day/month/year) <b>05.06.2003</b>																								
International Patent Classification (IPC) or national classification and IPC																										
Applicant <b>OKUTAMA KOGYO CO., LTD.</b>																										
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>3</u> sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table border="0"><tr><td><input checked="" type="checkbox"/></td><td>Box No. I</td><td>Basis of the report</td></tr><tr><td><input type="checkbox"/></td><td>Box No. II</td><td>Priority</td></tr><tr><td><input type="checkbox"/></td><td>Box No. III</td><td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td></tr><tr><td><input type="checkbox"/></td><td>Box No. IV</td><td>Lack of unity of invention</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. V</td><td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VI</td><td>Certain documents cited</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VII</td><td>Certain defects in the international application</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VIII</td><td>Certain observations on the international application</td></tr></table>			<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand	Date of completion of this report																									
Name and mailing address of the IPEA/JP	Authorized officer																									
Facsimile No.	Telephone No.																									

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/007709

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
  - ☐ publication of the international application (Rule 12.4)
  - ☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

- ☐ the international application as originally filed/furnished
- ☒ the description:

pages 1, 3, 5-8 as originally filed/furnished

pages\* 2, 4 received by this Authority on 14.01.2005

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☒ the claims:
- nos. 2-7 as originally filed/furnished

nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19

nos.\* 1 received by this Authority on 14.01.2005

nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ the drawings:
- sheets \_\_\_\_\_ as originally filed/furnished

sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages \_\_\_\_\_

☐ the claims, nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	<u>1-7</u>	YES
	Claims	_____	NO
Inventive step (IS)	Claims	<u>1-7</u>	YES
	Claims	_____	NO
Industrial applicability (IA)	Claims	<u>1-7</u>	YES
	Claims	_____	NO
2. Citations and explanations (Rule 70.7)			
Document 1: JP 54-160597 A (Shiraishi Kogyo Kabushiki Kaisha), 19 December 1979			
Document 2: JP 10-59716 A (Kyodo Kumiai Tsukumi Fine Ceramics Kenkyu Center et al.), 03 March 1998			
Document 3: JP 9-309723 A (Okutama Kogyo Co., Ltd.), 02 December 1997			
Document 4: JP 3-14696 A (Okutama Kogyo Co., Ltd.), 23 January 1991			
Document 5: JP 3-197318 A (Okutama Kogyo Co., Ltd.), 28 August 1991			
<p>Document 1 makes disclosures in relation to acicular calcium carbide aggregates that have a void volume of 1.8 to 3.3 ml/g and a specific surface area of 8 to 20 m<sup>2</sup>/g, which are formed by intertwining acicular primary particles that have a length (L) of 0.5 to 10.0 μm and a width (W) of 0.05 to 0.20 μm in a three-dimensional manner (refer to the claims, examples 1 and 3, and tables 1 and 2). Therein, the abovementioned length, width and void volume can be considered to correspond to the major axis, the minor axis and the pore volume in the invention that is set forth in claim 1, and</p>			

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

the aspect ratio (i.e. the ratio of the major axis / the minor axis) thereof can be said to be 3 or more. However, the invention that is disclosed in document 1 pertains to acicular calcium carbide aggregates, as is indicated above; therefore, document 1 does not disclose or suggest the invention that is set forth in claim 1, wherein fusiform primary particles are aggregated so as to form blocks.

Document 2 discloses spherical calcium carbide complexes that have a pore volume of 0.1 to 3.0  $\mu\text{m}$ , which are formed by aggregating tabular primary particles that have a diameter of 0.2 to 10.0  $\mu\text{m}$  and a thickness of 0.02 to 2.00  $\mu\text{m}$  into a spherical shape (refer to claims 1, 3 and 4). Therein, the abovementioned diameter and thickness can be considered to correspond to the major axis and the minor axis in the invention that is set forth in claim 1. In addition, document 1 presents configurations wherein the secondary particles have a diameter of 10  $\mu\text{m}$  in examples 1 and 3, and presents configurations wherein the specific surface area is 10  $\text{m}^2/\text{g}$  or 8  $\text{m}^2/\text{g}$  in examples 3 and 5 (refer to paragraphs [0017], [0029], [0031] and [0033]).

However, the invention that is disclosed in document 2 pertains to spherical complexes that are configured by aggregating tabular calcium carbide particles, as is indicated above; therefore, document 2 does not disclose or suggest the invention that is set forth in claim 1, wherein fusiform primary particles are aggregated so as to form blocks.

Meanwhile, document 3 discloses the feature of employing a slaked lime slurry with a quick lime concentration of 50 to 150 g/l that is obtained by

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

subjecting quick lime, which has been adjusted so as to have a 4N hydrochloric acid activity (a three minute value) of 150 to 350 ml, to a wet slaking process (refer to claim 1); document 4 discloses the feature of blowing a gas that contains carbon dioxide into a slaked lime slurry that has a slaked lime concentration of 3 to 30 wt% until 85 to 95% of the slaked lime slurry has undergone a carbonization reaction, and thereafter adding more of the slaked lime slurry until the molar ratio of the calcium hydroxide that is present in the reaction solution in relation to the calcium hydroxide that is present in the slaked lime slurry reaches a molar ratio of 10:1 to 1:20 and further blowing in more of the gas that contains carbon dioxide in order to concentrate the reaction (refer to claim 1 and page 3, lower right column, line 8 to page 4, lower right column, line 4); and document 5 discloses the feature of blowing a gas that contains carbon dioxide into a slaked lime slurry that has a slaked lime concentration of 7 to 15 wt% until 70 to 95% of the slaked lime slurry has undergone a carbonization reaction and thereafter continuously adding more of the slaked lime slurry until the molar ratio of the total amount of calcium that is present in the primary reaction solution in relation to the amount of calcium that is present in the slaked lime slurry reaches a molar ratio of 10:1 to 1:20 while also blowing more of the gas that contains carbon dioxide into the slurry so as to maintain a pH level of 12 (refer to the claims). Therefore, documents 3 to 5 can be said to disclose the processes from the invention that is set forth in claim 2 in a fragmentary manner. However, the documents in question cannot be said to suggest the feature of

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Box No. V

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citations and explanations supporting such statement

combining the steps that are set forth in claim 2;  
likewise, it cannot be said to have been easy to conceive  
of obtaining the superior calcium carbide that is set  
forth in claim 1 by combining the steps from the  
invention that is set forth in claim 2, even with  
consideration of documents 3 to 5. Furthermore, documents  
1 and 2 disclose inventions that employ additives such as  
an oxycarbonic acid or a condensed phosphoric acid  
compound; therefore, said inventions employ a different  
technique from the invention that is set forth in claim  
2.

For the reasons that are indicated above, the  
inventions that are set forth in claims 1 and 2 involve  
an inventive step. Moreover, the same is true with  
regards to claims 3 to 7, which cite claims 1 and 2.